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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,441	02/10/2004	Jose P. Pereira	NLMI.P149	3702
30554 7590 03/28/2007 SHEMWELL MAHAMED I LLP 4880 STEVENS CREEK BOULEVARD SUITE 201 SAN JOSE, CA 95129			EXAMINER PATEL, HETUL B	
			ART UNIT 2186	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/28/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

**Application No.**

10/776,441

**Applicant(s)**

PEREIRA ET AL.

**Examiner**

Hetul Patel

**Art Unit**

2186

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 30-34 is/are allowed.
- 6) ☒ Claim(s) 1-5, 9, 10, 13, 14, 18, 20-28, 35, 36, 40, 46, 47, 49 and 50 is/are rejected.
- 7) ☒ Claim(s) 6-8, 11, 12, 15-17, 19, 29, 37-39, 41-45 and 48 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. This Office Action is in response to the communication filed on 12/26/2006. Claims 1, 3-8 and 18-20 are amended and none of the claims are cancelled or newly added. Therefore, claims 1-50 are currently pending in this application.
2. Prosecution of this application has been assumed by Examiner Patel.
3. Examiner would like to thank Applicant for pointing out the omission of the rejection/objection/allowance of any type to claim 2. It was due to an inadvertent oversight by the previous Examiner. As a result of this, this Office Action is made non-final.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-5, 9, 10, 13, 14, 18, 20, 23, 35, 36, 40, 46, 47, 49, and 50 rejected under 35 U.S.C. 103(a) as being unpatentable over Khanna et al. (Pat No 6539455) and further in view of Huey et al. (Pat No 5467349), Huse et al. (Pat No 6521994) and Schultz et al. (USPN: 6,230,236).

Regarding claims 1, 3, 9, and 10, Khanna et al. describes a first CAM with a priority output, a second and third CAM with a priority input and enable output coupled to priority output, a second CAM with a priority output, the first CAM to output a first

priority, the second CAM to receive a first priority, the second CAM to output highest priority of the two, a third CAM to receive winning priority and to output an enable signal to the second CAM if the winning priority is higher than the third priority, and the output bus coupled to each CAM (column 4, lines 15-19, column 21, fig 13).

Khanna et al. does not expressly disclose an enable inputs coupled between the CAMs to conduct first enable signal.

Huey et al. does disclose an enable inputs coupled between the CAMs to conduct first enable signal (column 10, lines 7-20).

Khanna et al., Huey et al. and Huse et al. are analogous art because they are from the same field of endeavor, CAM systems. At the time of the invention it would have been obvious to a person of ordinary skill in the art to have enable inputs coupled between CAMs to conduct a first enable signal. The suggestion for doing so would have been reduced footprint. Therefore, it would have been obvious to combine Khanna et al., Huey et al. and Huse et al. for the benefit of size to obtain the invention as specified in claims 1, 3, 9 and 10.

Neither of Khanna et al., Huey et al. and Huse et al. teach the newly added limitation of a CAM core to output a local match address, and a cascade logic circuit to output the local match address from the first CAM device in response to assertion of a first enable signal at the first enable input. Schultz et al., on the other hand, teaches a CAM core (i.e. 120 in Fig. 2) to output a local match address (i.e. sa in Fig. 2), and a cascade logic circuit (i.e. made with logic gate shown in Fig. 5) to output the local match address (i.e. sa in Fig. 5) from the first CAM device (i.e. 120 in Fig. 2) in response to

assertion of a first enable signal (i.e. sae in Fig. 5) at the first enable input (e.g. see Col. 1, lines 56-67 and Figs. 2 and 5). Khanna et al., Huey et al., Huse et al. and Schultz et al. are analogous art because they are from the same field of endeavor, CAM systems. At the time of the invention it would have been obvious to a person of ordinary skill in the art to implement the teachings of Schultz et al. in the system taught by the combination of Khanna et al., Huey et al. and Huse et al.. In doing so, it would prevent more than one CAM chip from providing the match address signal to the common bus simultaneously.

Regarding claims 4, 5, 40, and 50, Khanna et al., Huey et al., Huse et al. and Schultz et al. describe all the limitations of claim 1. Khanna et al. also describes a CAM outputting a first priority from the first CAM, outputting a first enable signal from the third CAM to the second CAM if the first or second priority is higher than the third, outputting the enable to another CAM if the remote priority is higher than the local (column 4, lines 15-19, column 21, fig 13), and generating local priority and match addresses (column 5 line 64 to column 6, line 8 and column 8, lines 6-20).

Huse et al. describes a CAM core to output a local match address and local priority value in response to a compare, cascade logic coupled to receive a priority value from the CAM core and a remote priority value from the priority number of the third CAM, cascade logic configured to output an enable signal from an enable output of the third CAM if a remote priority has higher priority, enable a local match address to output bus if the local priority is higher, cascade logic coupled to receive a priority value from the CAM core and a remote priority value from the priority number input of the

second CAM, cascade logic configured to output an enable signal from the enable output of the second CAM if the remote priority has higher priority, an enable local match address to output bus if the local priority is higher and an enable signal is received from the enable input of the second CAM (column 11, lines 13-48, column 12, lines 26-45), and outputting a match address to the bus if local priority is higher than the remote priority and the enable signal is received from the second other CAM (column 1, lines 12-30).

Khanna et al., Huey et al., Huse et al. and Schultz et al. are analogous art because they are from the same field of endeavor, CAM systems. At the time of the invention it would have been obvious to a person of ordinary skill in the art to output the match and enable signals. The suggestion for doing so would have been to choose which CAM to take data from. Therefore, it would have been obvious to combine Khanna et al., Huey et al., Huse et al. and Schultz et al. for the benefit of using a cascading CAM to obtain the invention as specified in claims 4, 5, 40, and 50.

Regarding claims 13, 14, 18, 20, 35, 36, 46, 47, and 49, Khanna et al., Huey et al., Huse et al. and Schultz et al. describe all the limitations of claims 9 and 10 and Khanna et al. also describes the first CAM including a first (as well as a second and third) CAM core to generate a first, second or third match address that corresponds to a first, second or third priority, the first CAM generating a local priority value, outputting numerically the lowest one of the first and second priorities (column 2 lines 6-27), and generating a match address within the second or third CAM (column 5 line 64 to column 6, line 8 and column 8, lines 6-20).

Huse et al. describes a third CAM configured to output a third match address onto the output bus if the third CAM outputs a first enable signal and the second priority contains the winning value, outputting a match address from the first CAM if the local priority is higher and an enable received from a third CAM (column 1, lines 12-30), comparing local priority with a remote priority received from the second CAM, outputting a match address onto the output bus that is coupled to the CAMs, outputting a match address onto the output bus that is coupled to the CAMs if the first enable is output from the third to second CAM and the second priority is higher than the first, outputting a match address onto the output bus that is coupled to the CAMs if the third priority is higher than the first and second priorities (column 11, lines 13-48, column 12, lines 26-45)

Khanna et al., Huey et al., Huse et al. and Schultz et al. are analogous art because they are from the same field of endeavor, CAM systems. At the time of the invention it would have been obvious to a person of ordinary skill in the art to add what was described in Huse et al. The suggestion for doing so would have been to have a smaller footprint. Therefore, it would have been obvious to combine Khanna et al., Huey et al., Huse et al. and Schultz et al. for the benefit of size to obtain the invention as specified in claims 13, 14, 35, 36, 46, 47, and 49.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Khanna et al. (Pat No 6539455) and further in view of Huey et al. (Pat No 5467349), Huse et al.

(Pat No 6521994)n Schultz et al. (USPN: 6,230,236) and the 'Background of Invention' section of the current application, hereinafter, BOI.

As per claim 2, Khanna et al., Huey et al., Huse et al. and Schultz et al. teaches the claimed invention as described above, but does not teach that the first CAM device has a second enable input coupled to the enable output of the third CAM device. BOI, however, disclose that the first CAM device (i.e. Slave 1 CAM in Fig. 2) has a second enable input (i.e. connected to E1 of Master CAM in Fig. 2) coupled to the enable output of the third CAM device (i.e. E1 of Master CAM in Fig. 2) (e.g. see Fig. 2). Accordingly, it would have been obvious to one of ordinary skills in the art at the time of the current invention was made to implement the enable input that is coupled to the enable output of the third CAM device as claimed so the master CAM can enable the third CAM device (i.e. the Slave 1 CAM in Fig. 2) by sending an enable signal upon determining that the third CAM device has the highest priority over other CAMs.

6. Claims 21, 22, 25-27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huse et al. (Pat No 6521994) in view of BOI.

Huse et al. describes a CAM core to output a local priority, a CAM comprising a configuration circuit coupled to cascade logic to provide a control value, the core configured to store configuration information within the configuration circuit in response to a configuration instruction from a host device, the configuration information being a value including one or more bits that correspond to a control value (column 1, lines 12-30), cascade logic coupled to the core to a receive local priority number, having an input



to receive one or more remote priority numbers from another CAM (column 8, lines 21-42, and column 11, lines 13-48), an interface to receive a control value (figure 8), the CAM core comprising an instruction decoder being coupled to the configuration circuit (figure 7a) and cascade logic configured to compare priority according to a control value (column 11, lines 13-48, column 12, lines 26-45).

Huse et al. does not teach that a cascade logic circuit having an input to receive at least one remote priority number from another CAM device. BOI, however, discloses a cascade logic circuit (part of the Master CAM in Fig. 2) having an input (i.e. receiving P# from other CAMs) to receive at least one remote priority number (i.e. P# in Fig. 2) from another CAM device (from one of the Slave CAM in Fig. 2).

BOI and Huse et al. are analogous art because they are from the same field of endeavor, CAM systems. At the time of the invention it would have been obvious to retrieve the remote priority number(s) from other CAM device so it can be determined which CAM has the highest priority and based on that enable signal is sent to the CAM with the highest priority. Therefore, it would have been obvious to combine BOI and Huse et al. for the benefit as described above.

7. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huse et al. in view of BOI, further in view of Khanna et al. and Huey et al.

Regarding claim 23, the combination of Huse et al. and BOI describes all the limitations of claims 21 and 22, but does not describe the configuration circuit

comprising a programmable non-volatile storage to store the configuration value or the configuration value including one or more bits that correspond to the control value.

Khanna et al. describes the configuration circuit comprising a programmable non-volatile storage to store the configuration value (column 9, lines 1-17).

Huey et al. describes the configuration value including one or more bits that correspond to the control value (column 9, lines 12-42).

Khanna et al., BOI, Huey et al. and Huse et al. are analogous art because they are from the same field of endeavor, CAM systems. At the time of the invention it would have been obvious to a person of ordinary skill in the art to store the configuration value in non-volatile memory. The suggestion for doing so would have been easier recovery. Therefore, it would have been obvious to combine Khanna et al., Huey et al. and Huse et al. for the benefit of recovery to obtain the invention as specified in claim 23.

8. Claim 24 rejected under 35 U.S.C. 103(a) as being unpatentable over BOI and Huse et al. as applied to claims 21 and 22 above, and further in view of Pereira (Pat No 6324087).

BOI and Huse et al. describe all the limitations given in claims 21 and 22 but do not describe the configuration circuit being one time programmable.

Pereira does describe the configuration circuit being one time programmable (column 6, lines 7-21).

BOI, Huse et al. and Pereira are analogous art because they are from the same field of endeavor, CAM systems. At the time of the invention it would have been obvious

to a person of ordinary skill in the art to have the configuration circuit be one time programmable. The suggestion for doing so would have been so that it could be customized. Therefore, it would have been obvious to combine BOI, Huse et al. and Pereira for the benefit of customization to obtain the invention as specified in claim 24.

### ***Allowable Subject Matter***

9. Claims 30-34 allowed. The examiner could find no good art regarding the output of a second enable signal from a second other CAM if the remote priority was higher.

10. Claims 6-8, 11, 12, 15-17, 19, 29, 37-39, 41-45, and 48 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hetul Patel whose telephone number is 571-272-4184. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on 571-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*H.B. Patel* 03/21/2007  
Hetul Patel  
Patent Examiner  
Art Unit 2186